

Enhancing Digital STEM

There are broadly **two components of effective teaching**, as defined by Devlin and Samarawickrema (2010)

- 1) a set of practices and skills as identified by research
- 2) a selection of strategies that are suited to the context in which they are employed.

Currently, educators practicing within digital STEM environments face an **unreasonably high barrier of entry to the evidence base** as it is **fragmented across dozens of potentially relevant sources** containing 100,000+ potentially relevant papers. It should be noted that the STEM disciplines have **unique learning goals** that reflect the nature of the disciplines, as such it is essential that any evidence-based strategy used is suited to the context in which they are employed. Compounding this problem is the background of the typical STEM educator who is formally educated in the natural science or engineering disciplines and as a result, has not had the opportunity to **develop the capability to critically engage with an evidence base**.

In order to **enhance the effectiveness of digital STEM teaching and learning** this project will achieve the following objectives:

- **Objective 1 - Collate evidence-based practices that are compatible with STEM online learning environments and needs**
- **Objective 2 - Increase capability to critically engage with evidence base through Professional Development Events**
- **Objective 3 - Create a Digital STEM Hub to support adopters of evidence-based practice**

In order to provide a theoretical base for the **Digital Short Course**, the **project will also collate an evidence base of relevant research materials using the PRISMA methodology**. This will result in a focused quality assured evidence base that will lower the barrier for entry to evidence-based practice within digital STEM. Both the Short Course and Evidence Base will be housed within the Digital Hub. This Hub will provide a centralized reserve of supporting resources and structures. In addition, it will include the functionality to allow for future sources of evidence to be submitted in order to ensure that practice continues to evolve.

Through the **assorted professional development events and resources** developed by this project, 140 digital STEM educators will develop their capacity to implement evidence-based practice. These events will encourage engagement with the resources and structures developed by the project. This will **positively impact approximately 17,000 students** with the first 18 months of the project. The structures created by the project will continue to support capacity development for a minimum of 10 years after completion and will **ultimately positively impact over 100,000 students over its lifetime**.

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